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THE SCIENCE OF USABILITY AND HOW IT CAN SUPPORT SUSTAINED ASSESSMENTS

Overview

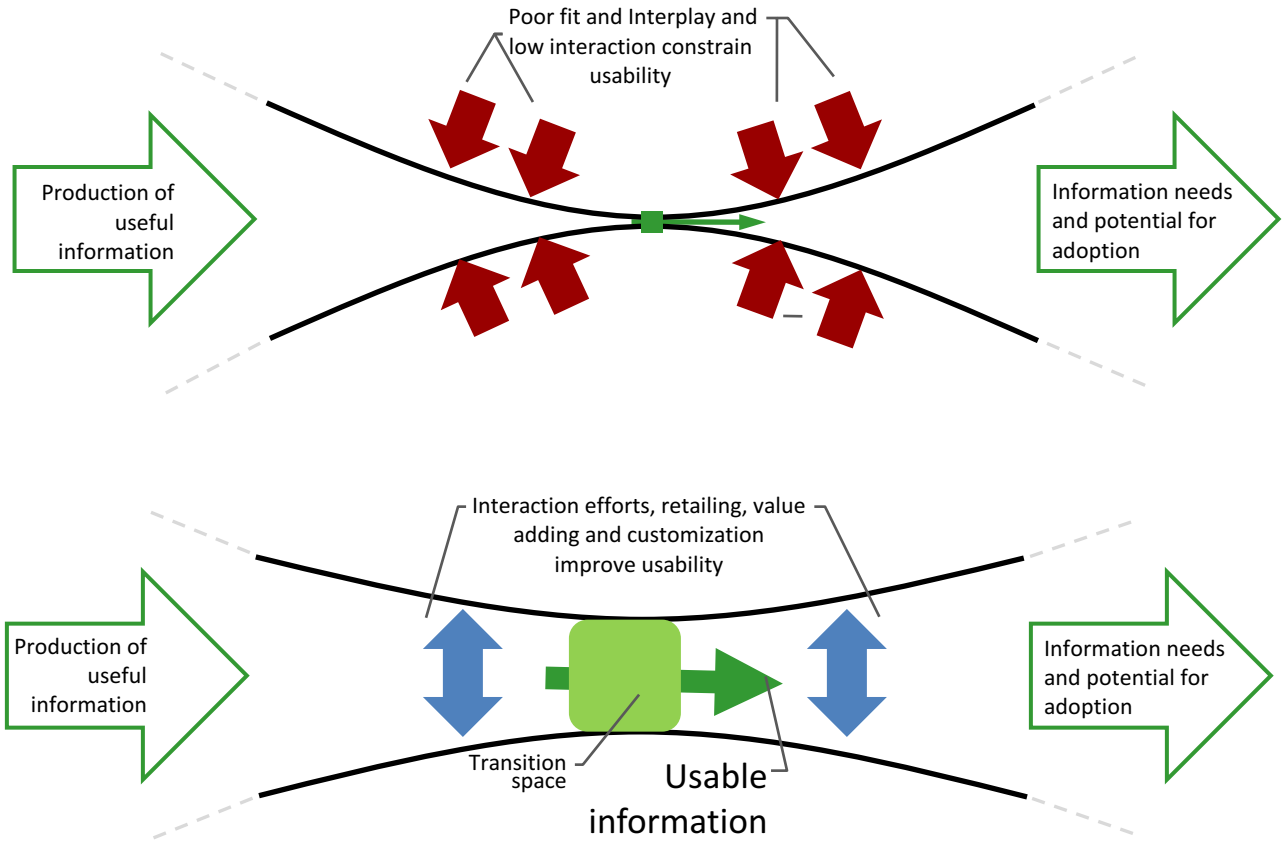
- Science of usability:
  - the need for sustained interactions
  - Acceleration of uptake

- Strategies
  - co-production
  - Boundary chains
  - Networks

- Potential role for the SNCA FAC: advisory report on options for sustained interactions and co-production in the context of the USGCRP and NCA

Narrowing the gap

(Lemos, Kirchhoff, Ramparasad 2011)



Co-production space

Factors across the production-use range

Stakeholder Interaction/collaboration/Iteration

Salient, Credible, Legitimate

Customization, communication, visualization, value-adding, retailing

Purposefulness, social learning, adaptive governance of and across boundaries, Boundary organizations, boundary objects and spanning

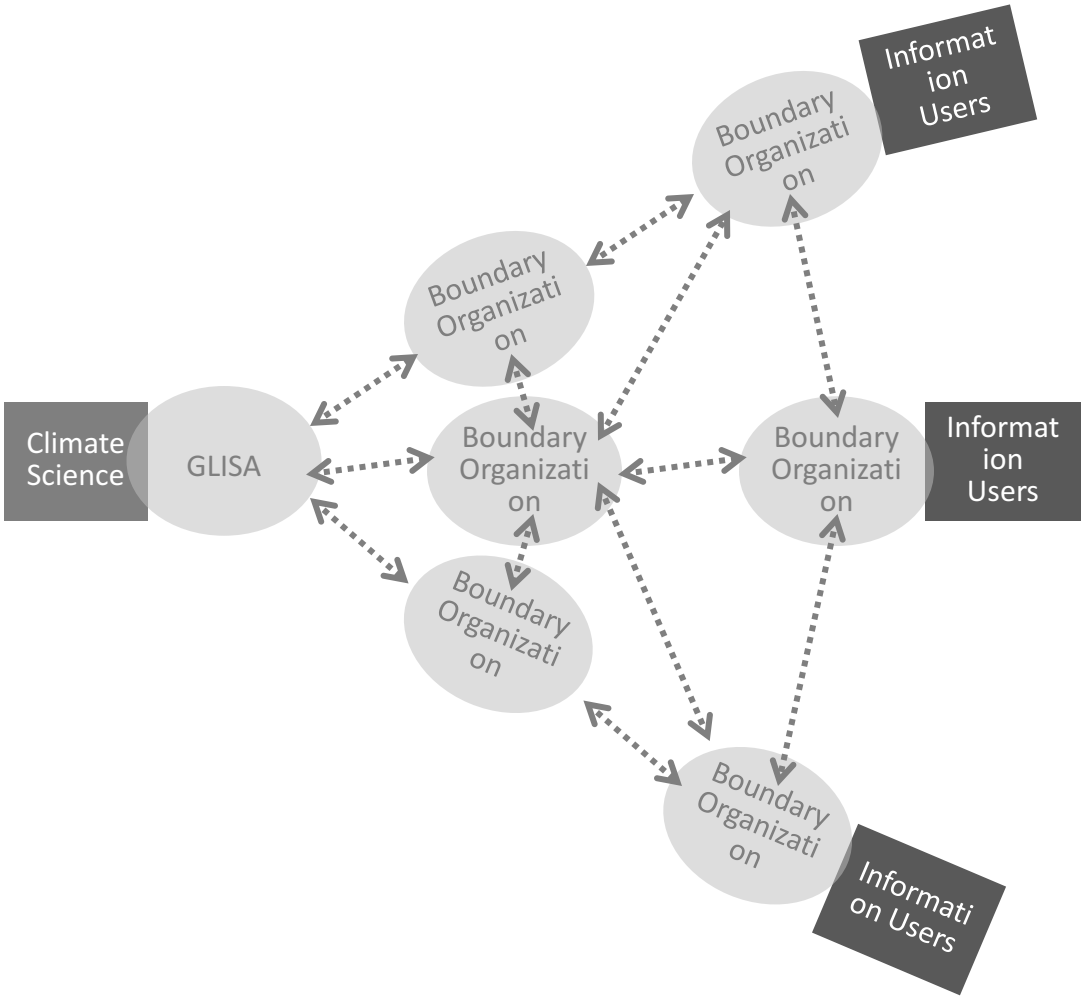
Evaluation, Decision Science, Translational science, Policy Sciences

EXAMPLES OF MECHANISMS AND RESEARCH

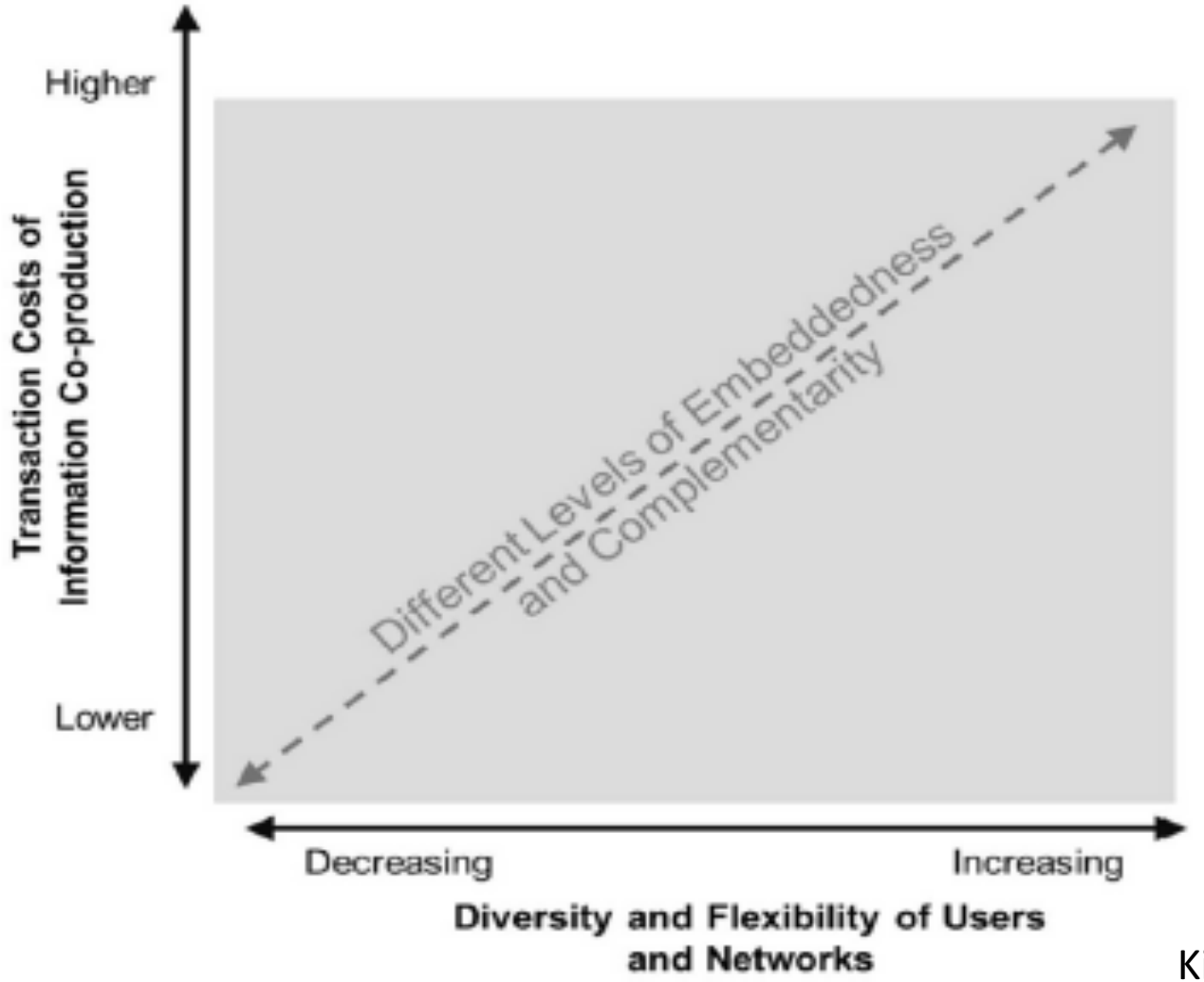
Boundary Chains

Linked Chain Arrangement

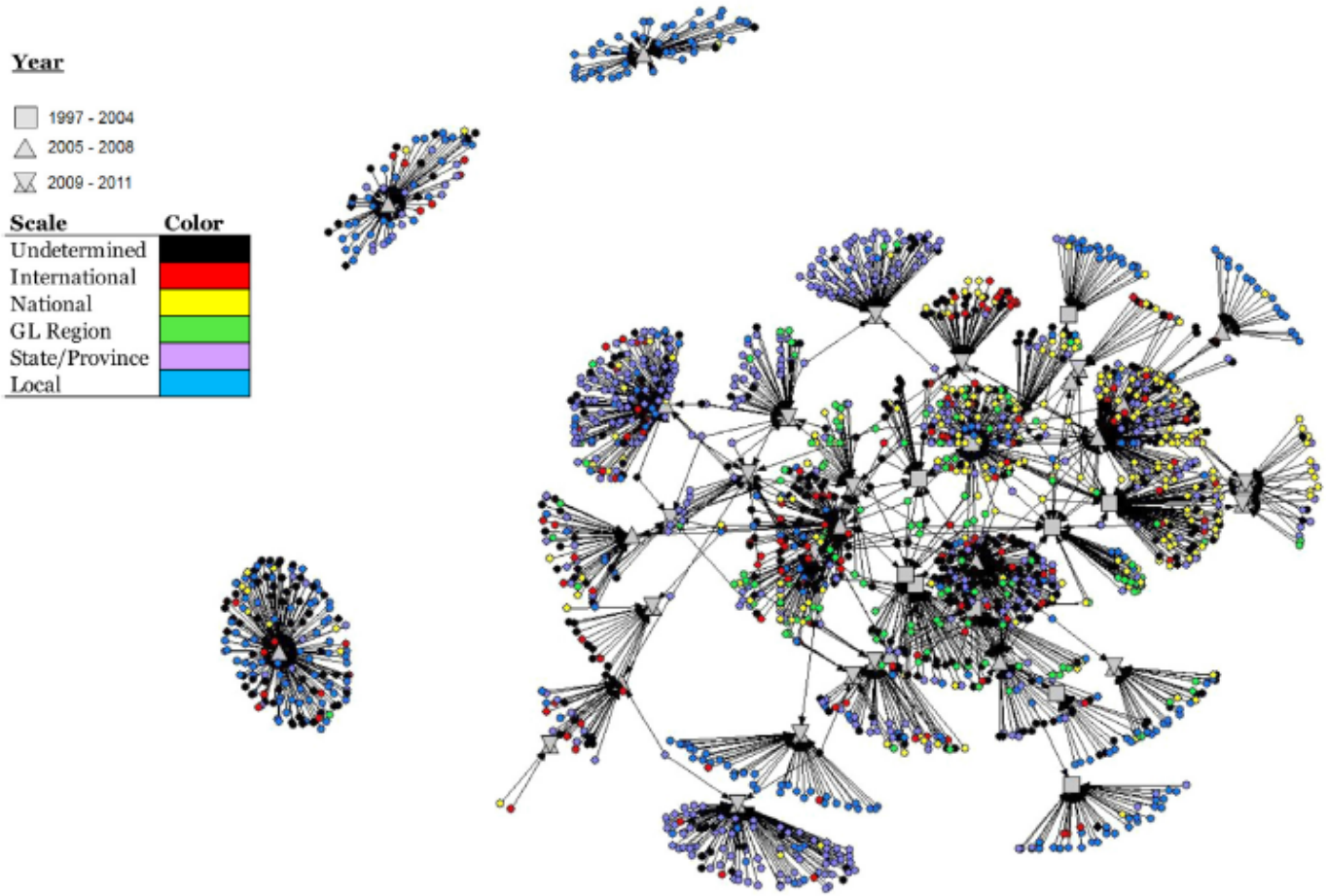
Networked Chain Arrangement

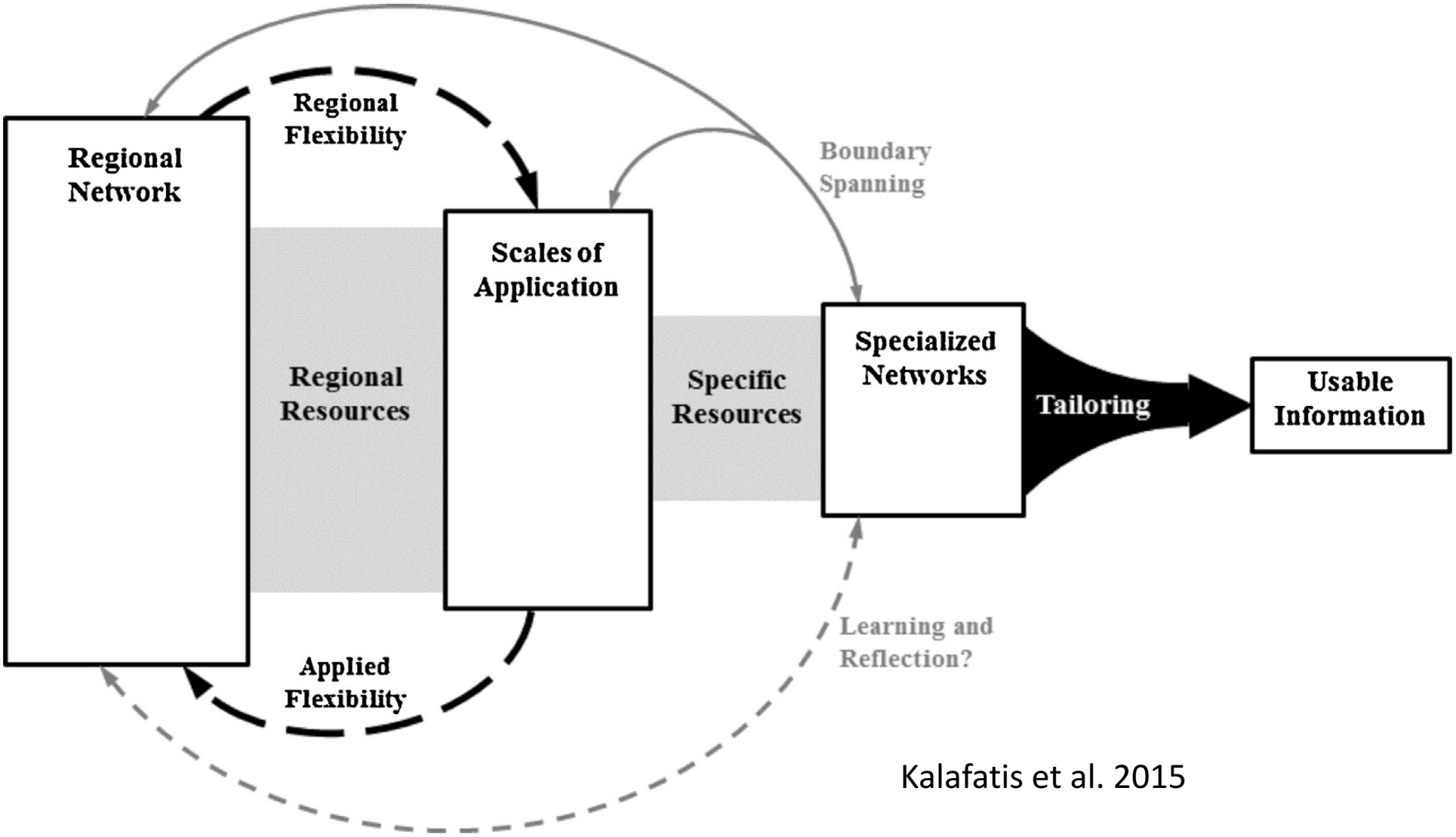


Why and how boundary chains work



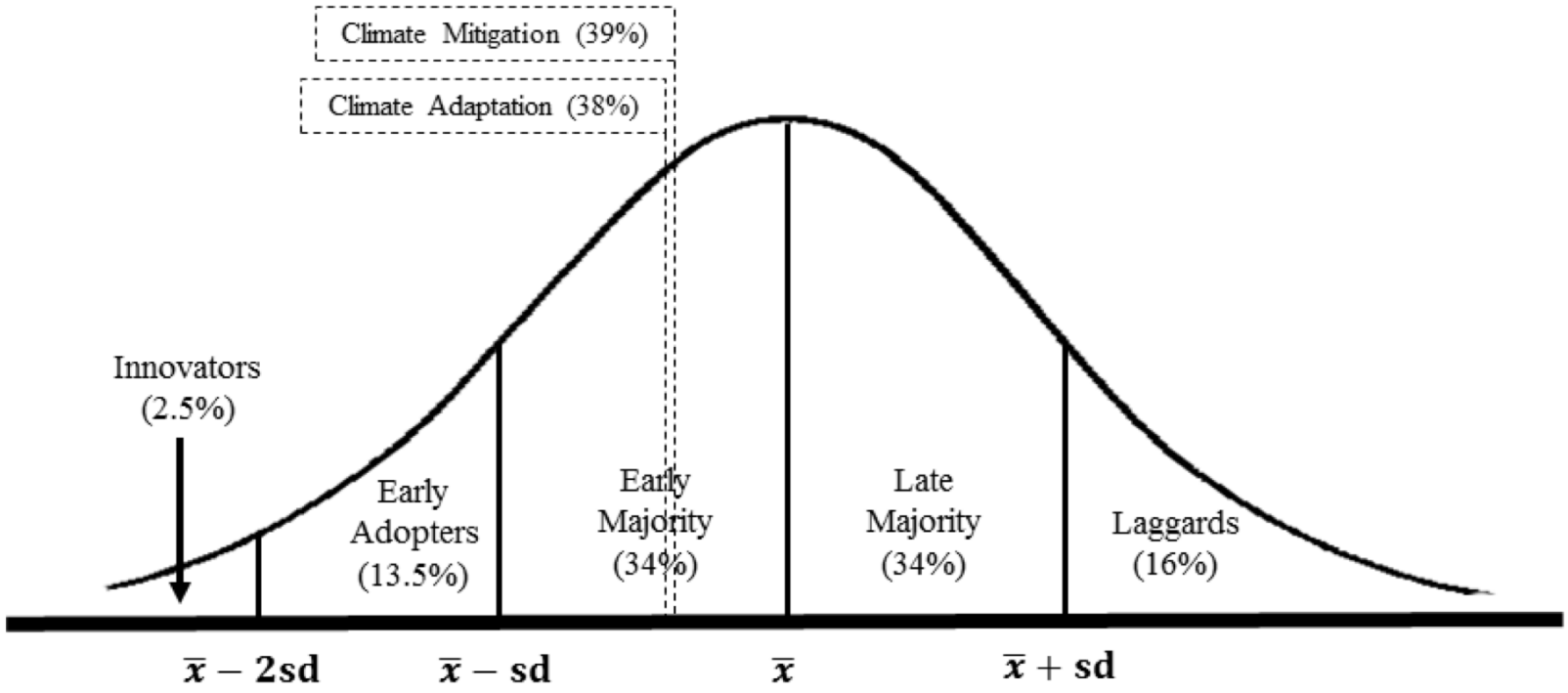
Kirchhoff et al. 2015


Year
1997 - 2004
2005 - 2008
2009 - 2011
Scale
Color
Undetermined
International
National
GL Region
State/Province
Local



Kalafatis et al. 2015

time.


Climate Mitigation (39%)
Climate Adaptation (38%)
Innovators
(2.5%)
Early
Adopters
(13.5%)
Early
Majority
(34%)
Late
Majority
(34%)
Laggards
(16%)
$\bar{x} - 2sd$
$\bar{x} - sd$
$\bar{x}$
$\bar{x} + sd$

Research Statement: co-production

Advance the research on and the use of co-production of knowledge and decision-making on climate responses

Including various approaches and science: e.g. policy sciences, social learning, communities of practice, decision sciences, climate services, evaluation of co-production outcomes, technology innovation.

IPCC Recommendation

1) Enhance the focus on decision-making and implementation by different actors, at different scales and levels by including a chapter that may focus on:

   - Evaluating the impact of decisions and what makes the science that has informed it usable (e.g. the role of evaluation and co-production in accelerating information use).
   - Understanding decision needs, typologies of users and decisions, and drivers of co-production,
   - Including different temporal and spatial scales, as well as the levels at which decisions may or may not be implemented.

Role for SNCA FAC?

- Developing approaches to sustain interactions among users, scientists, and federal agencies continues to be a challenge
- The FAC could prepare a short report to develop some options for ‘experiments’ or evaluation of current mechanisms to try approaches in NCA context.

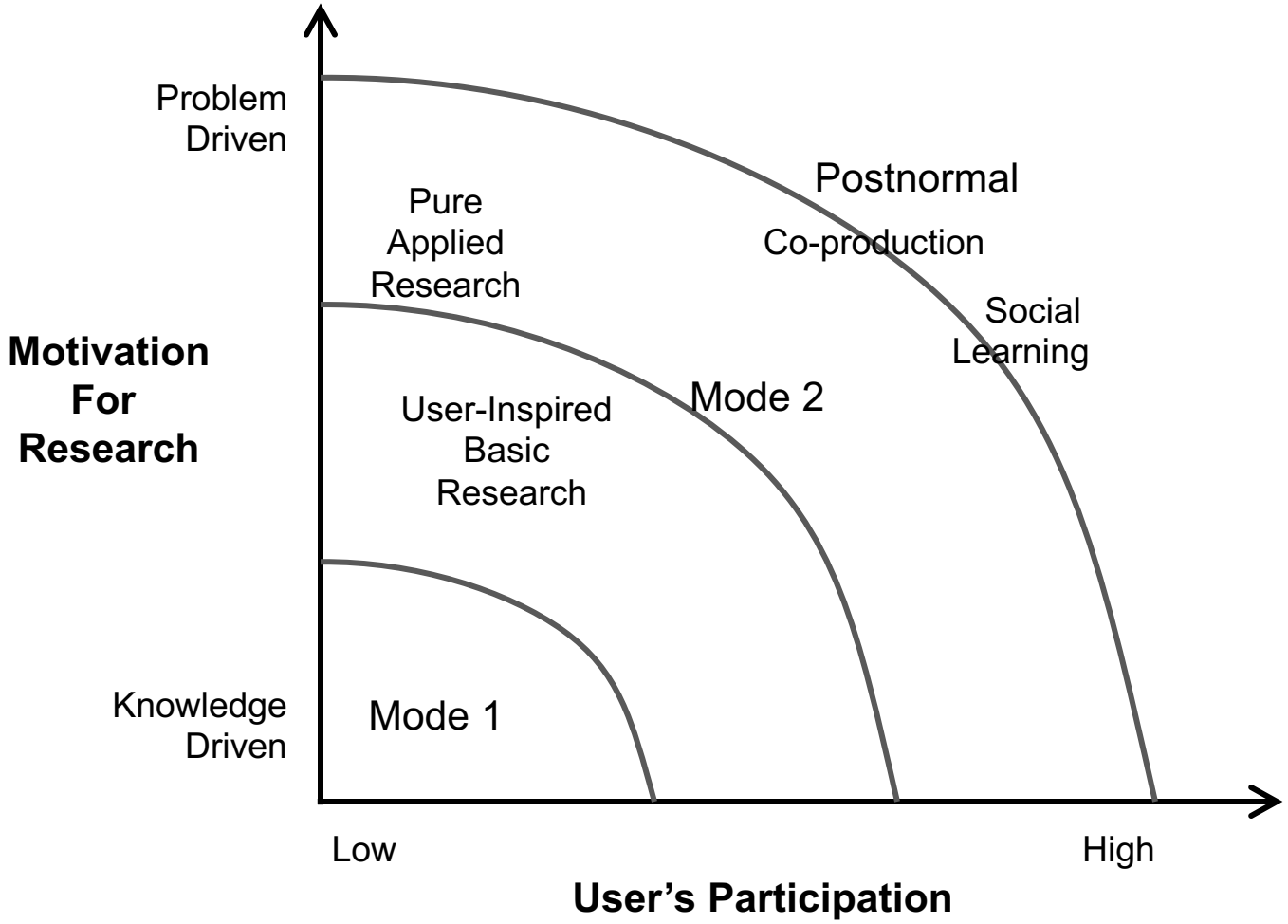
Possible topics to include

- What are the benefits of “enduring collaborative partnerships” in a sustained assessment process?
- How do we scale up mechanisms that work
- How do we aggregate across different users without loosing sight of their specific needs?

- What are the challenges and transaction costs of sustaining interactions within the NCA context? Are they different for different partners?

- What can we learn from different disciplines (e.g. translational science, business, social psychology, policy sciences) and other experiences (e.g. UK Climate Assessment, other countries' approaches)?

- Options and experiments for improving sustained collaborative partnerships



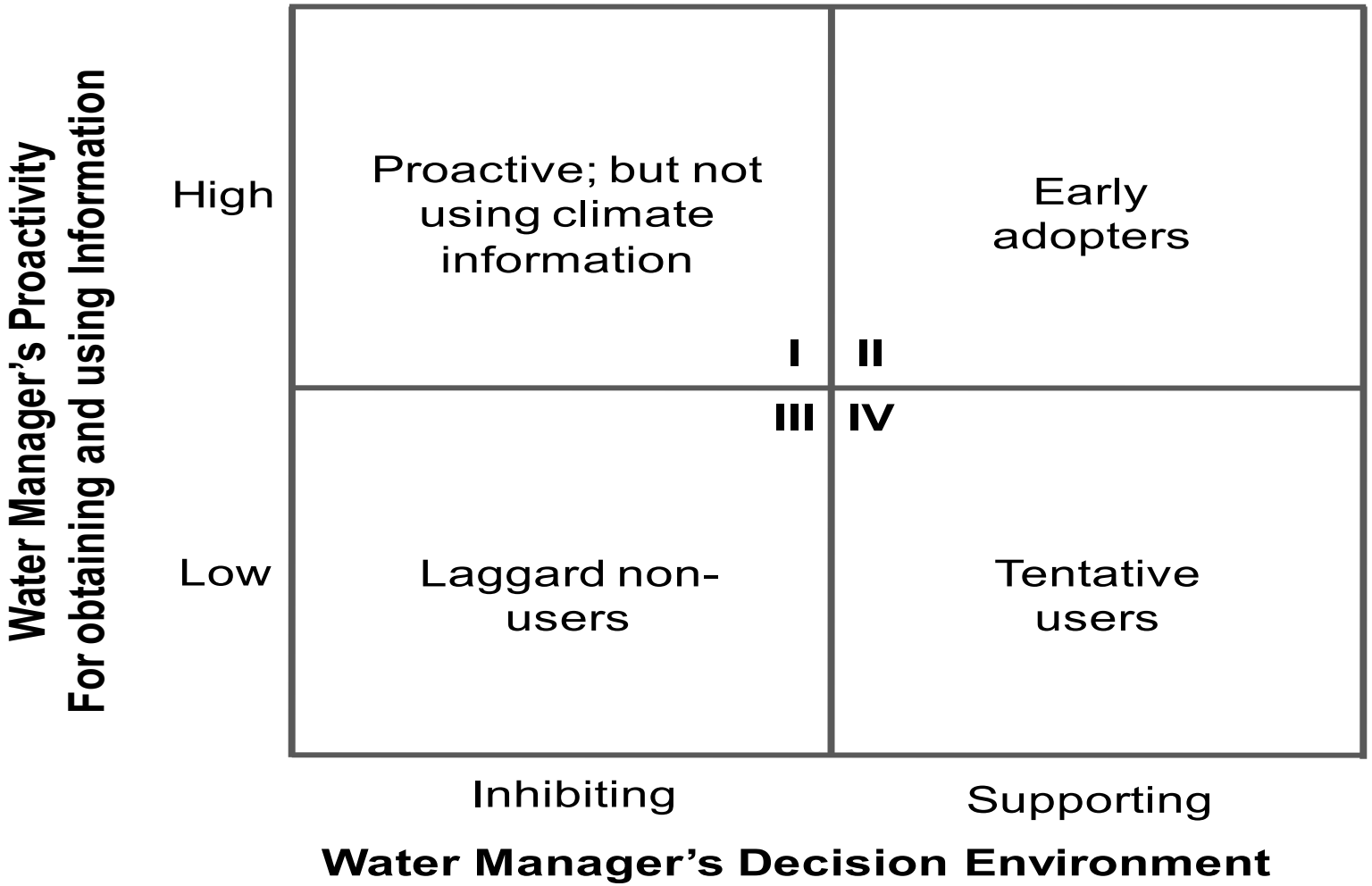
Kirchhoff, Lemos, Desai 2013

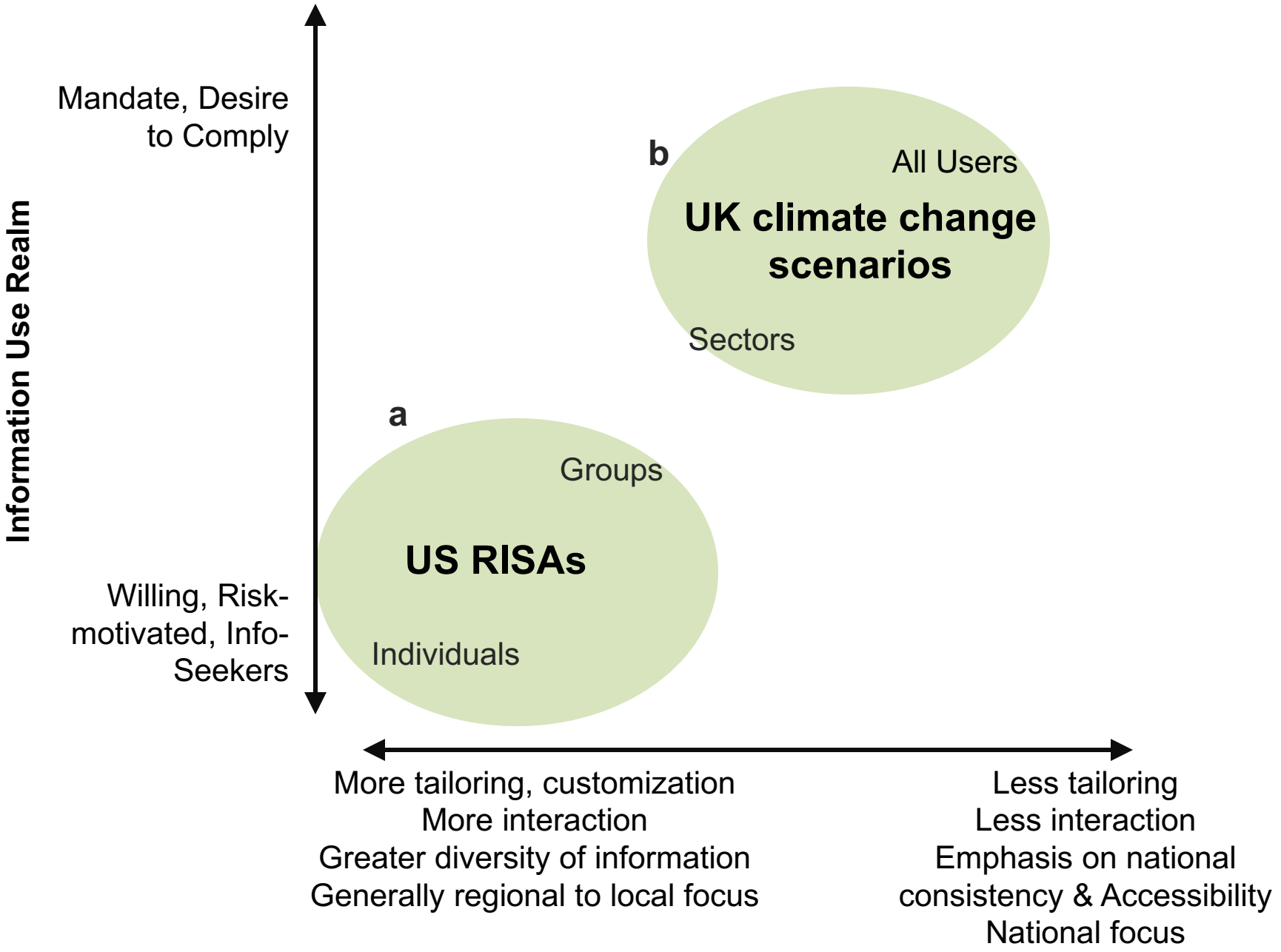
What have we learned from SCFs?

Table 1 | Summary of opportunities and barriers that affect usability derived from the literature.

	Barriers identified in the literature		Opportunities identified in the literature	
Fit	Not accurate and reliable Not credible Not salient	Not timely Not useful; not usable Excessive uncertainty	Accurate and reliable Credible Salient	Timely Useful; usable
Interplay	Professional background Previous negative experience Value routine, established practices, local knowledge Low or no perceived risk Difficulty incorporating information	Insufficient technical capacity (for example lack of models) Culture of risk aversion Insufficient human or financial capacity Legal or similar Lack of discretion	Previous positive experience Threat of public outcry; public pressure Perception of climate vulnerability Sufficient human or technical capacity More flexible decision framework	Technocratic insulation Water scarcity In-house expertise Triggering event/crisis (drought, El Niño and so on) Organizational incentives Value research; information seeking
Interaction	Not legitimate One-way communication	Infrequent interaction End-user relationship	Legitimate Two-way communication Iterative	Trust Long-term relationship Co-production

Typology of Users: Information Scaling vs. Decision Scaling





Kirchhoff, Lemos, Desai 2013